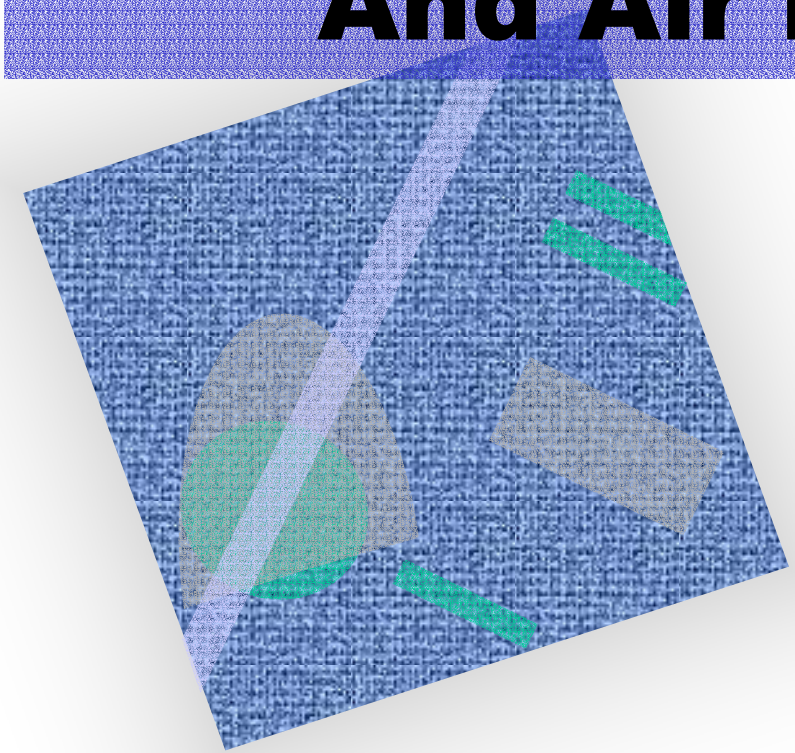
California Generation And Air Emissions



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California Generation and Air Emissions

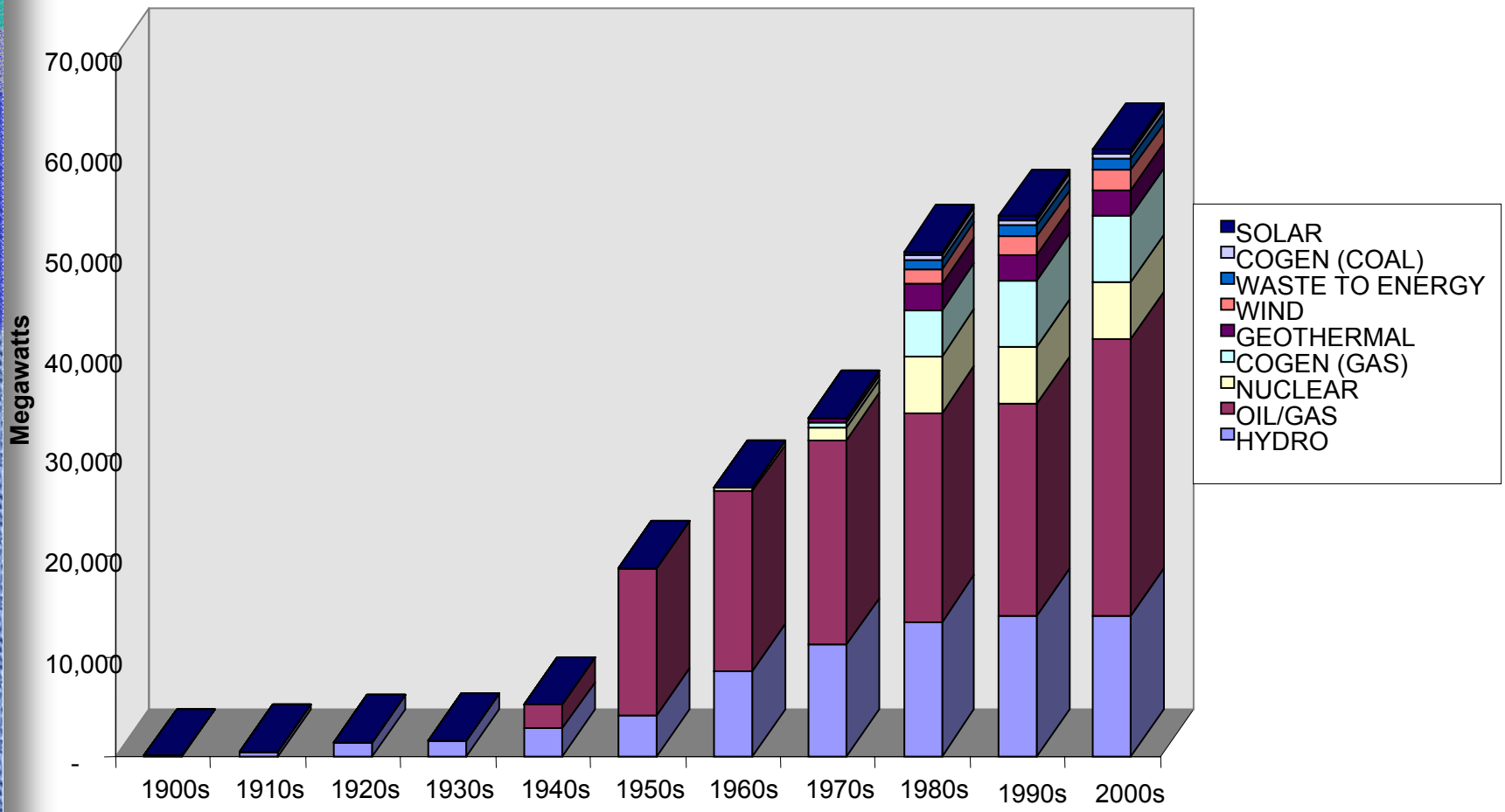
- California's electricity generation system is relatively clean
  - air emissions, not air quality
  - NOx and PM10 are the indicator pollutants
  - location of emissions matters
- Emission trends are expected to continue

Statewide Emissions From Generation (annual avg tons/day)

Pollutant	Source of Emissions	1975	1980	1985	1990	1995	2000	2005 (est.)	2010 (est.)
NO_x	From All Sources	4,761	4,947	4,950	4,929	4,207	3,570	3,008	2,573
	From Power Generation	385	341	161	141	107	79.0	66.5	65.1
	% Power Generation	8.1%	6.9%	3.3%	2.9%	2.5%	2.2%	2.2%	2.5%
PM_{10}	From All Sources	1,864	2,018	2,004	2,240	2,177	2,313	2,467	2,612
	From Power Generation	49.6	29.1	5.7	11.8	8.1	8.62	9.63	9.8
	% Power Generation	2.7%	1.4%	0.28%	0.53%	0.37%	0.37%	0.39%	0.38%

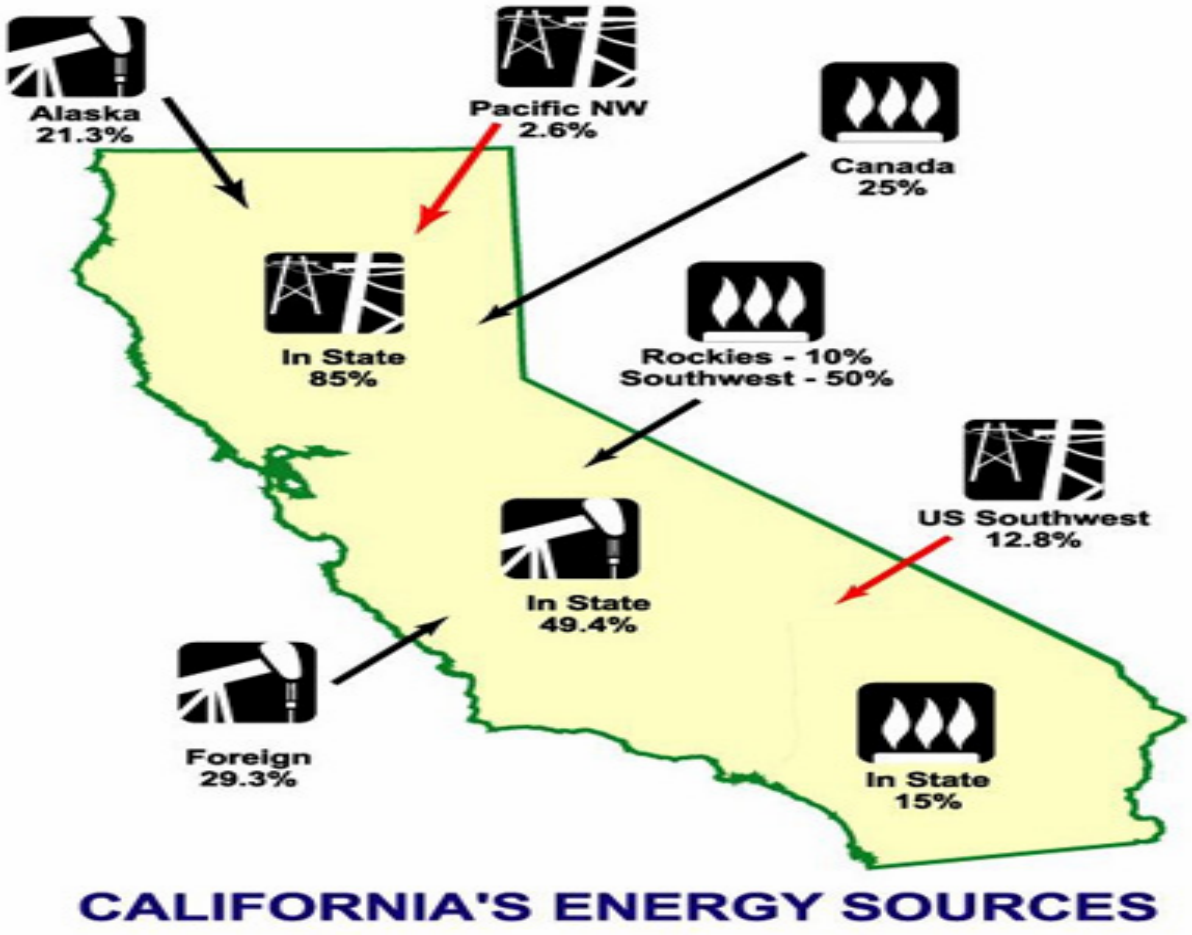
Source: 2001 EPR

California Cumulative Generating Capacity



Source: 2003 EPR

California relies on out of state energy

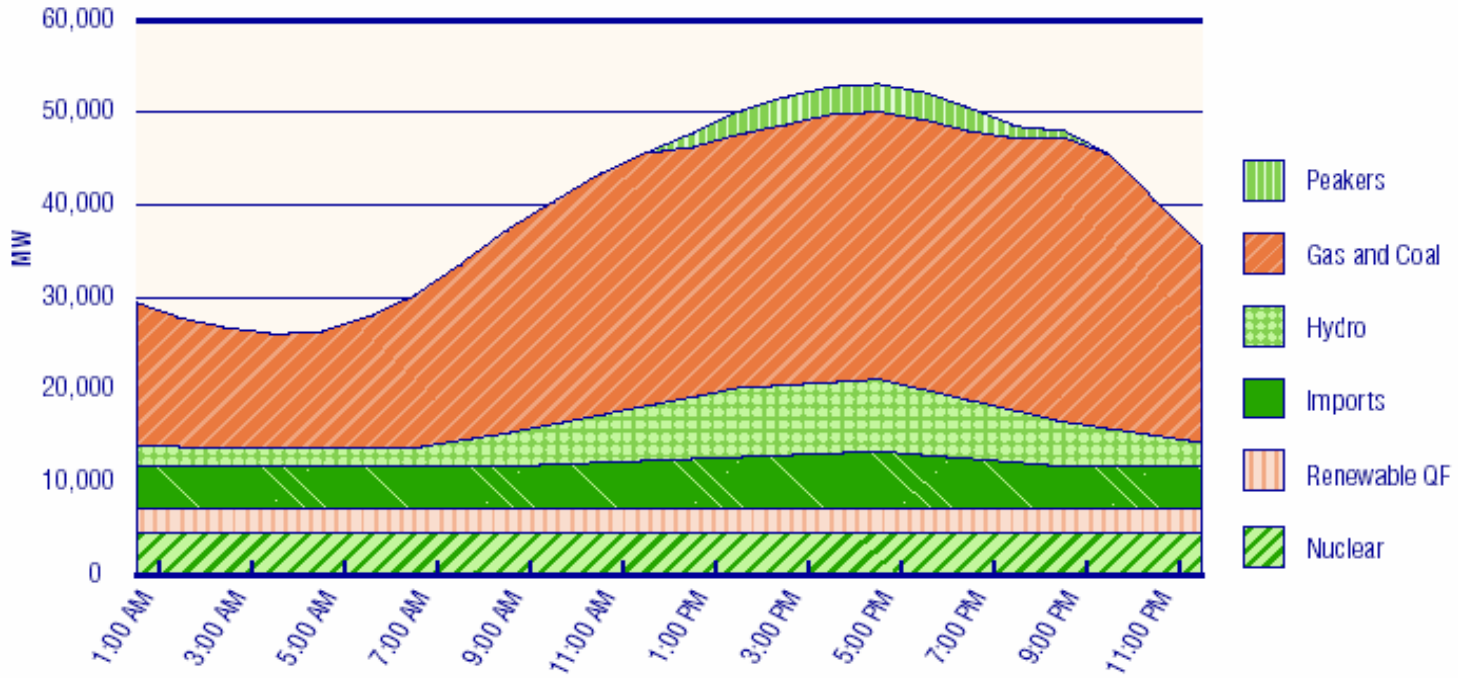


2001 data

Typical Daily Swing

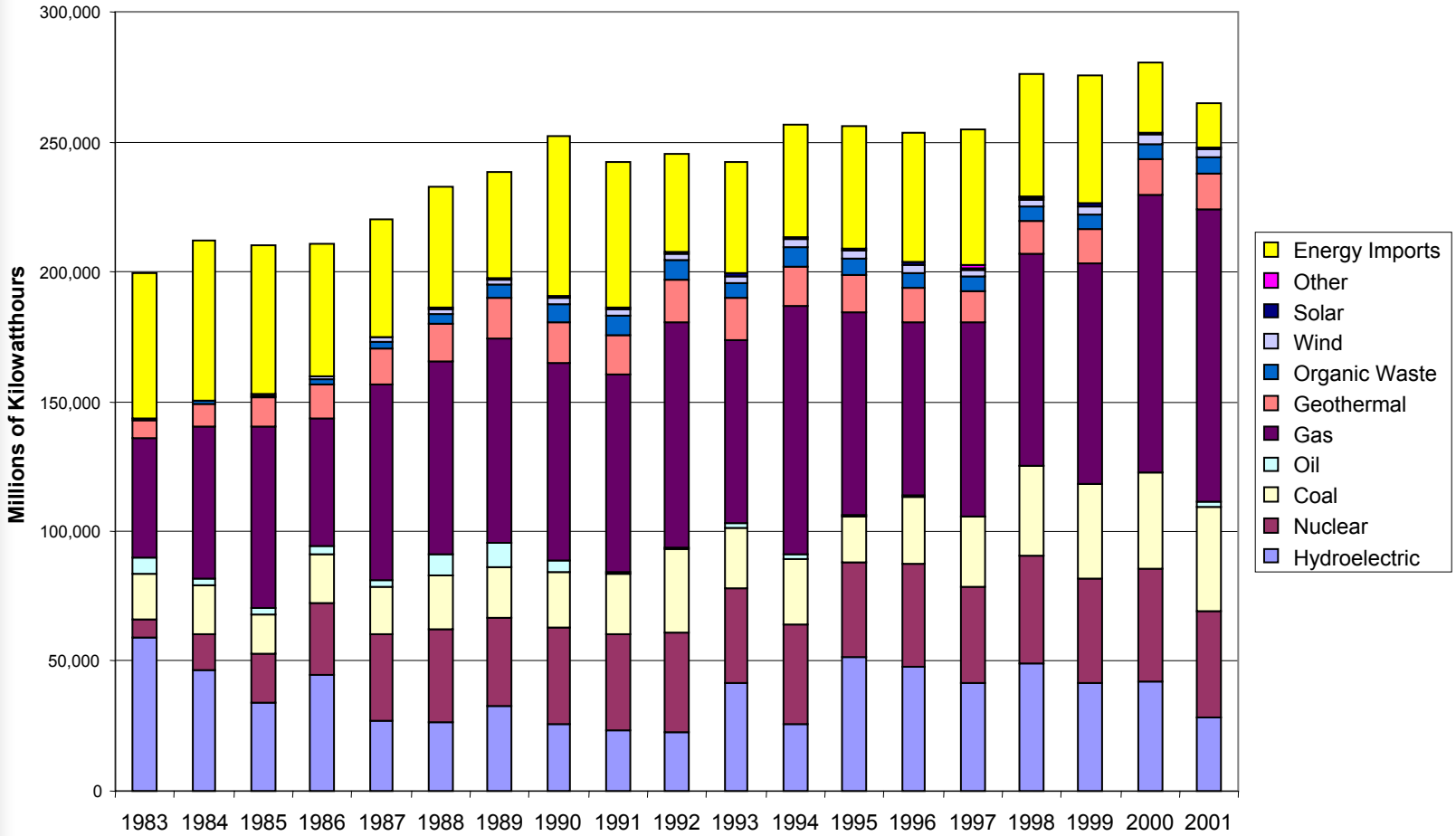
Figure I-3

The Electricity Supply and Demand Profile for a Typical Hot Summer Day



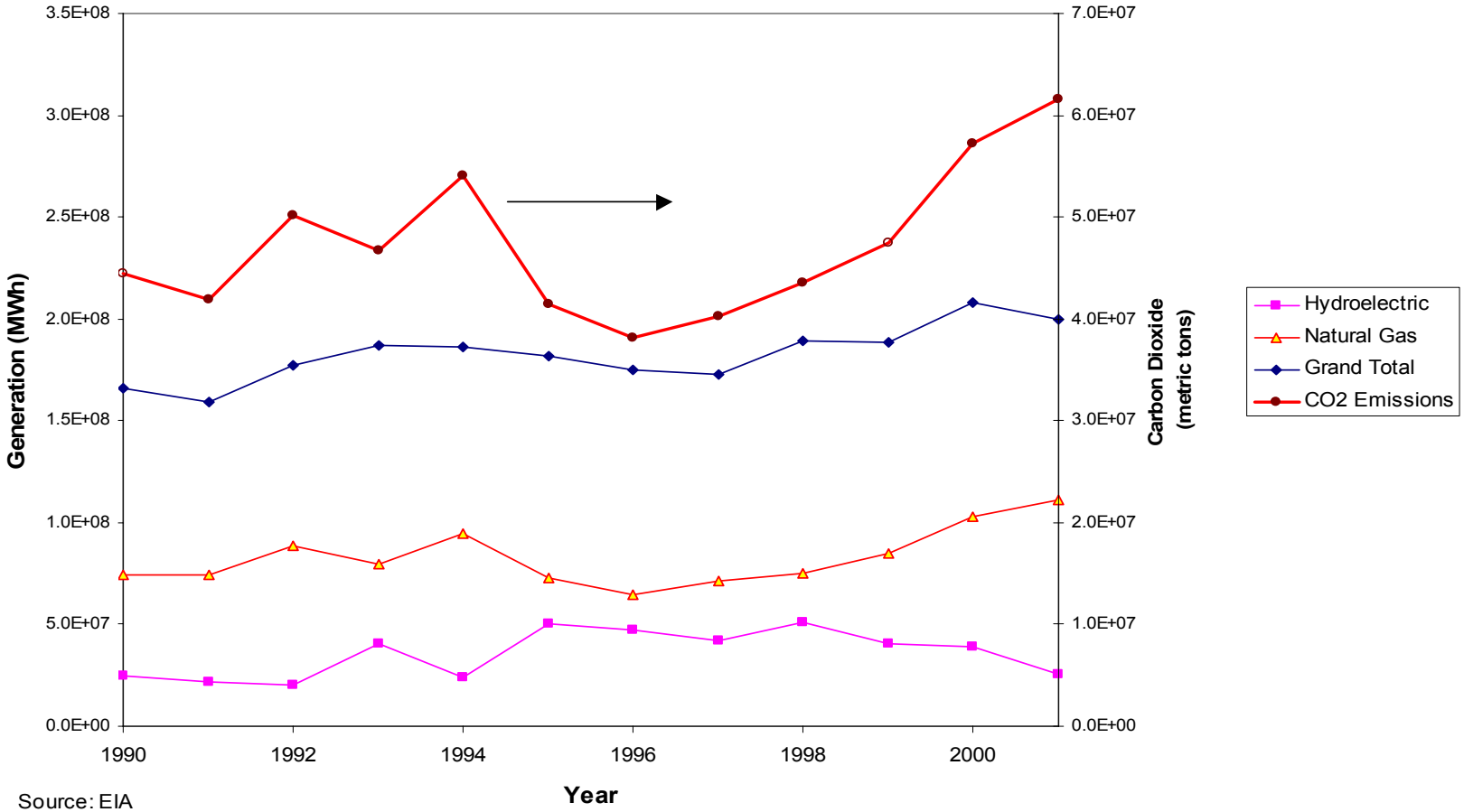
Source: 2003 EPR

Sources of California Electrical Energy Consumption



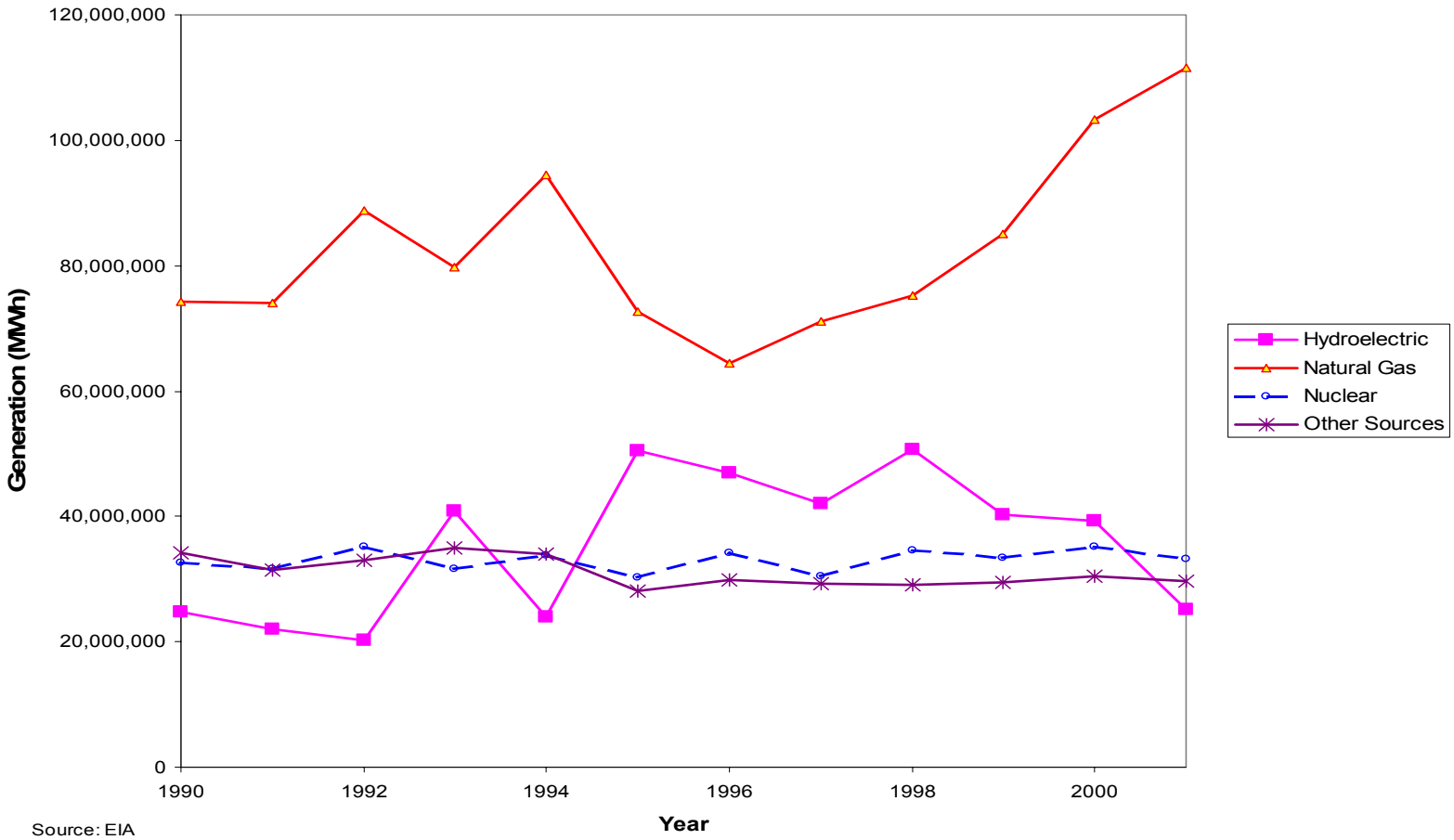
Source: 2003 EPR

California Electricity Generation Annual Swings



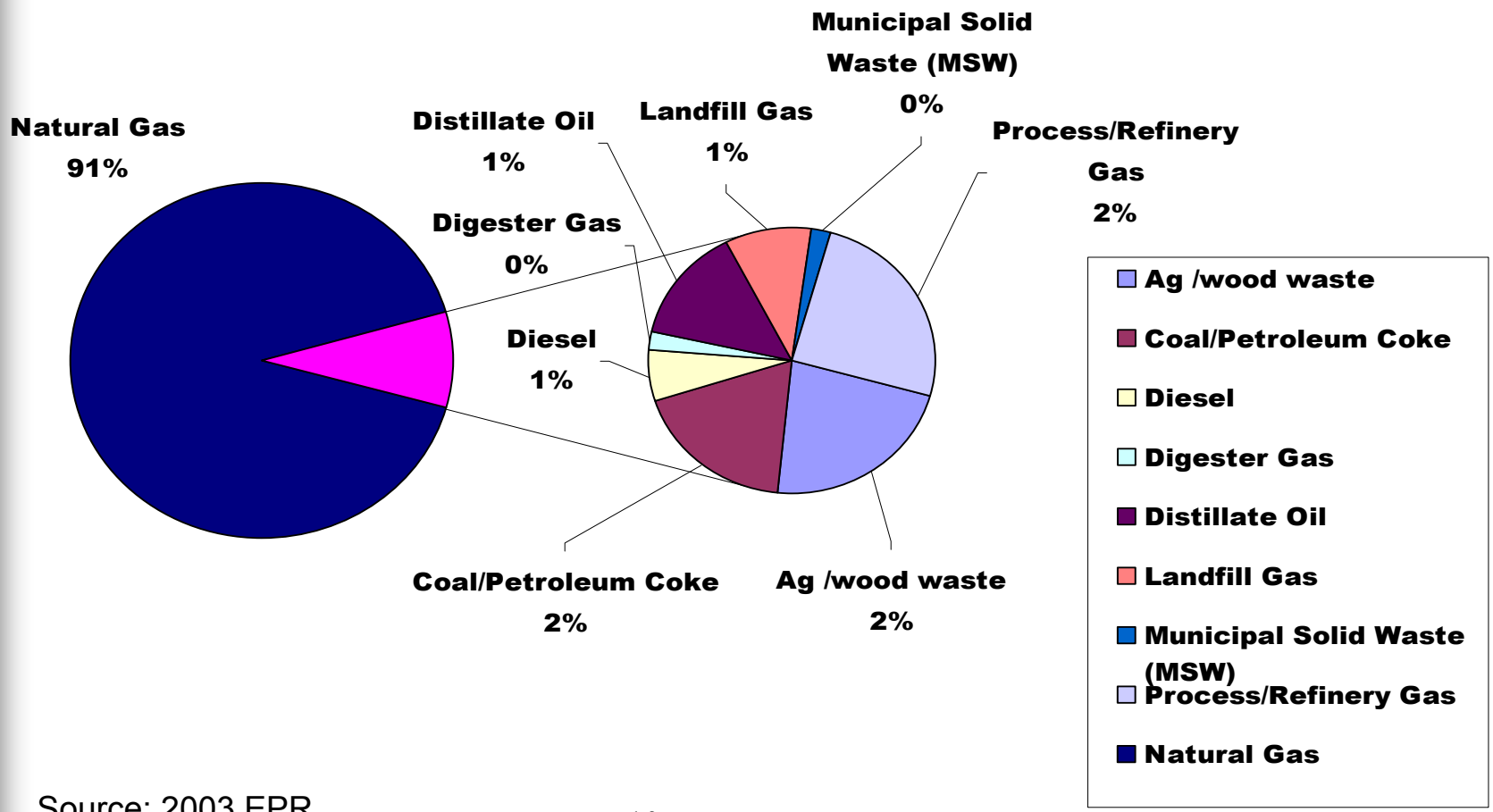
Source: EIA

California Electricity Generation: hydro versus natural gas



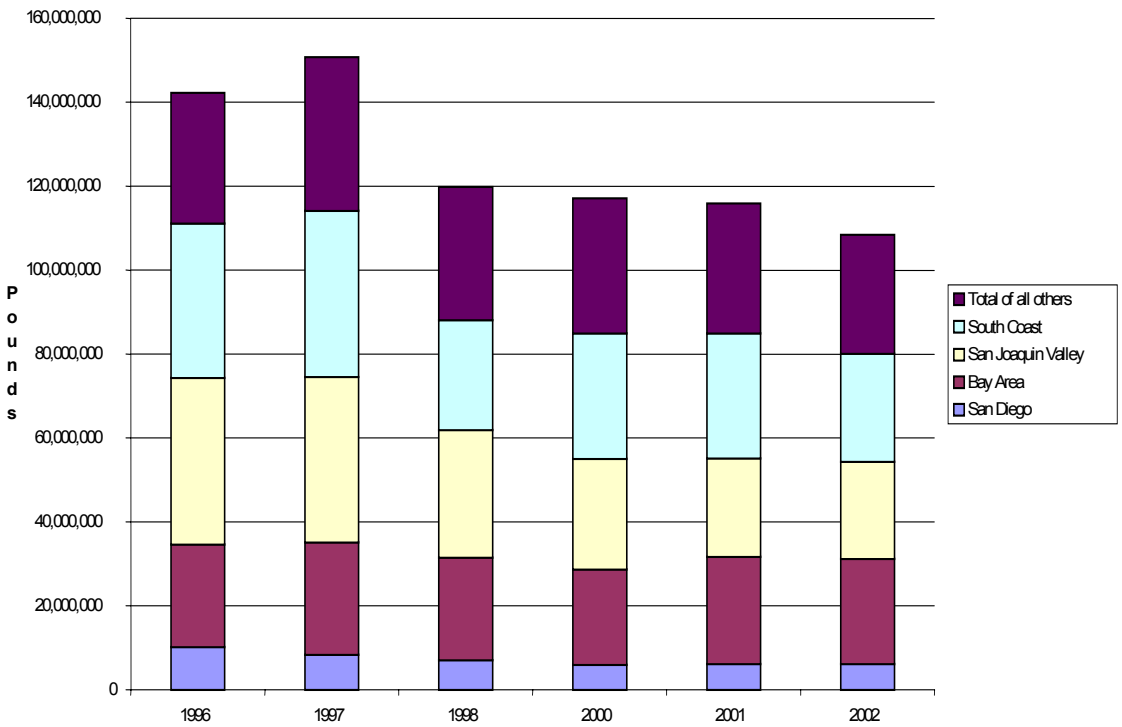
Source: EIA

Instate "Fuel-Fired" Generation Capacity



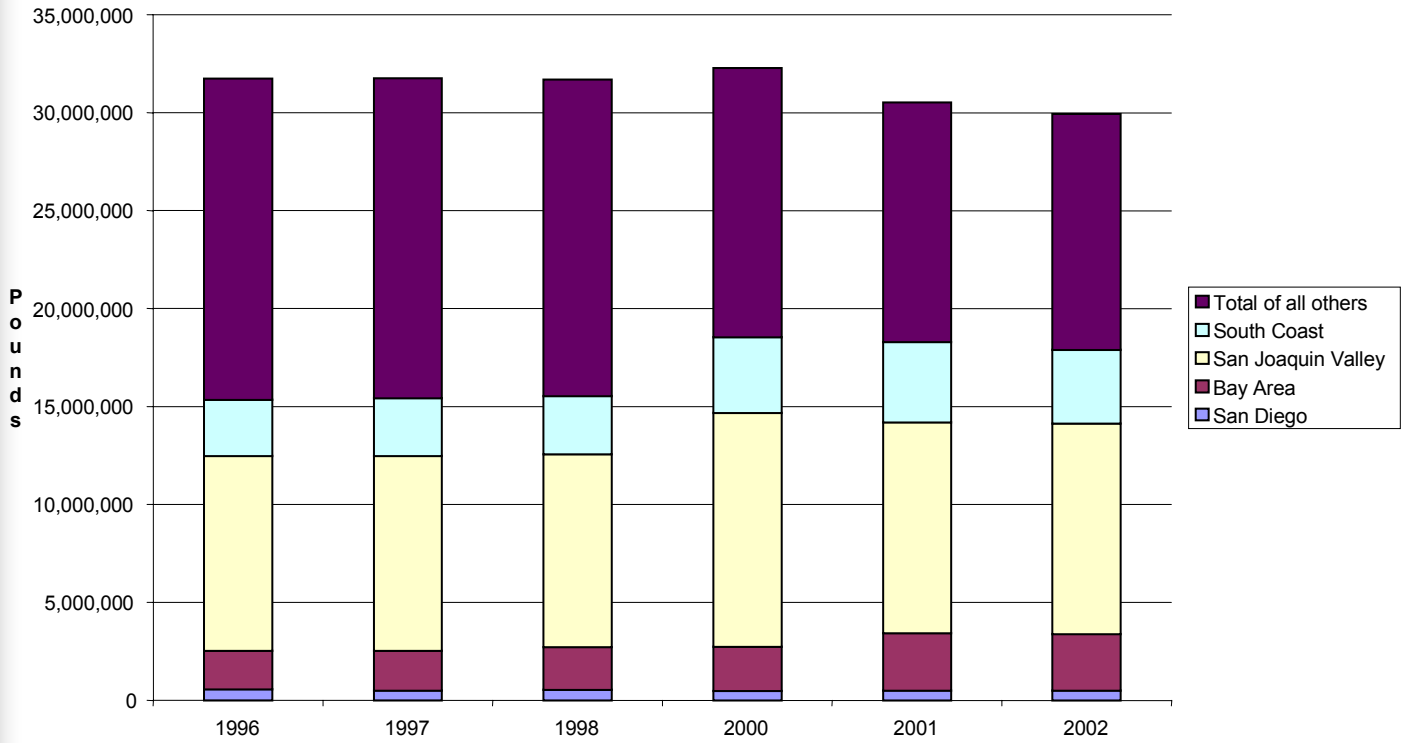
Source: 2003 EPR

California Generation NOx Emissions 1996-2002



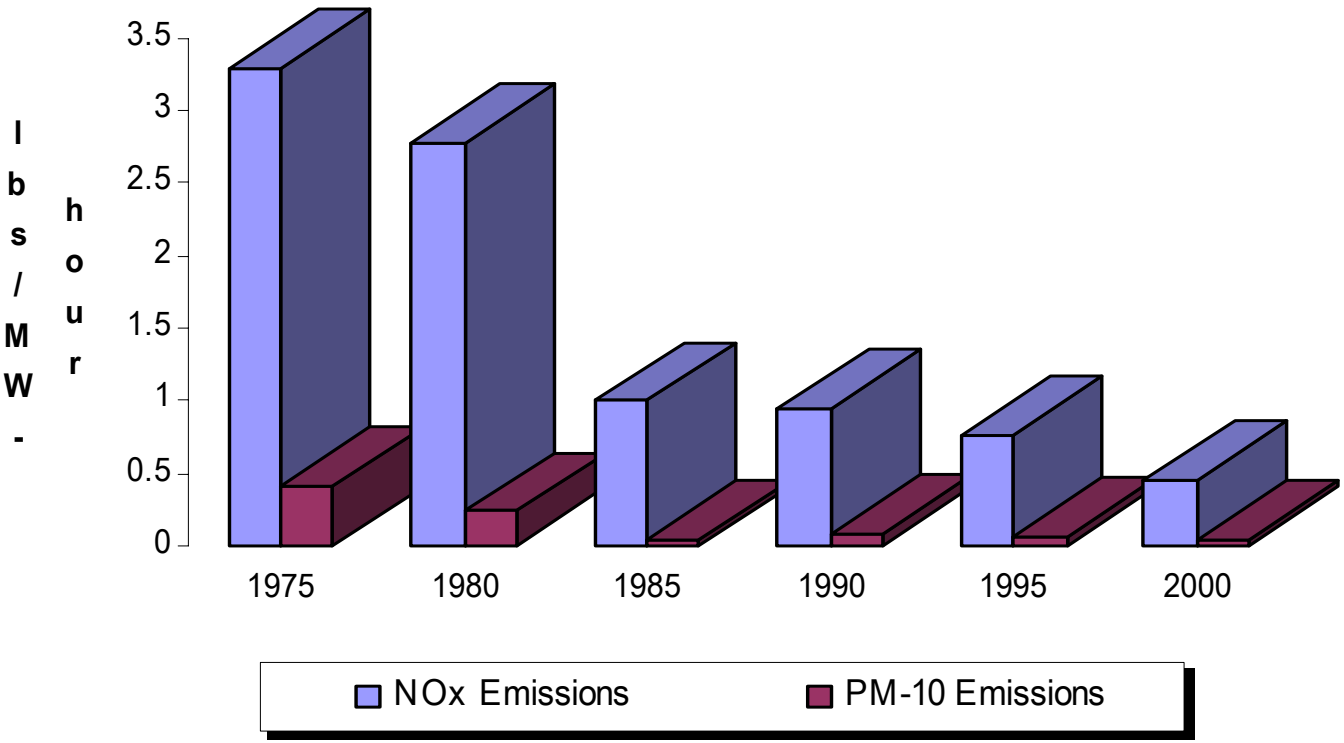
Source: 2003 EPR

California Generation PM10 Emissions 1996-2002



Source: 2003 EPR

California Generation - NOx & PM10 Emission Factors



Source: 2001 EPR

California's Generation Emissions

- The generation sector NOx and PM10 emissions are small
- NOx and PM10 emission factors are decreasing
- NOx emissions trended down, reflecting clean additions and NOx retrofits
- location still matters
  - emissions do not equal air quality

Generation and air regulations

- CPUC EIR on divestiture
  - existing rules adequate if units complied with existing control measures
- most generation boilers have been retrofit to comply with those NOx control measures
- most generators already use natural gas as control measure
- CARB preparing guidance document on NOx retrofit controls for existing combustion turbines
  - potential emission reductions need to be weighed against system reliability and peaking needs

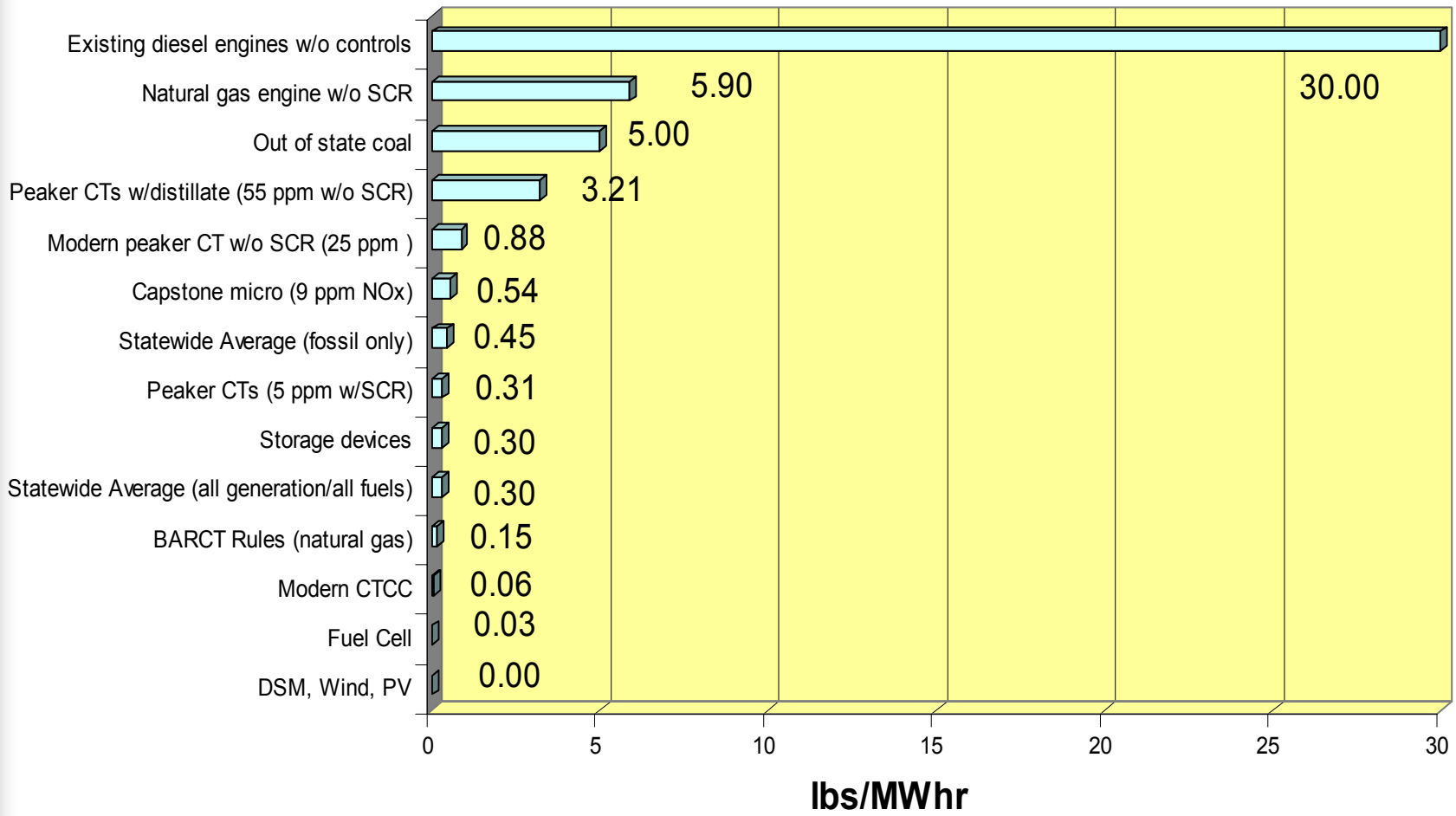
Emission trends for new additions

New generation will be more efficient

New generation will be clean

- Districts apply New Source Review:
  - Best Available Control technologies (BACT)
  - Offset requirements
- CARB updating guidance document for new generation
- Natural gas is the fuel of choice
- Renewable Portfolio Standard (20% by 2017)
- CARB Certification standard for exempt distributed resources

Generation NOx Emissions (lb/MWhr)



Source: 2001 EPR